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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/803,786

03/17/2004

Robert Dayton Sigler

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8053

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02/21/2006

MCDERMOTT WILL & EMERY LLP  
18191 VON KARMAN AVE.  
SUITE 500  
IRVINE, CA 92612-7108

EXAMINER

PRITCHETT, JOSHUA L

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 02/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/803,786

Applicant(s)

SIGLER ET AL.

Examiner

Joshua L. Pritchett

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stuhlinger ("All-reflective phased array imaging telescopes") in view of Anafi (US 4,953,964).

Regarding claims 1, 2, 8 and 10, Stuhlinger teaches a multiple aperture high fill factor telescope comprising a plurality of sub-aperture telescopes, each sub-aperture telescope being configured to collect electromagnetic radiation from a scene and including first, second, third, and four powered mirrors (Fig. 2). The curvature of the mirrors shown in Fig. 2 of Stuhlinger shows that the mirrors have a power on their surface. Stuhlinger further teaches a set of combiner optics configured to combine electromagnetic radiation collected by the sub-aperture telescopes to form an image of the scene (Fig. 2). Stuhlinger further teaches relay optics disposed within about a beam diameter of the respective exit pupils from the respective exit pupils of the sub-aperture telescopes (Fig. 2). Fig. 2 shows that the beam diameter of Stuhlinger is 3.5 meters and the relay optics are located within about 3.5 meters of the real exit pupils of the sub-aperture

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telescopes. Stuhlinger lacks reference to the relay optics including flat mirrors and trombone pair mirrors and having one set of relay optics for each sub-aperture telescope. Anafi teaches a relay section (620-660) for relaying light from a sub-aperture telescope to a combiner section for each of the sub-aperture telescopes. Anafi teaches the use of flat fold mirrors (620 and 660) and suggests the use of a trombone pair. It has been held (In re Larson, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965)) that it is within the ability of one of ordinary skill in the art to make two pieces of an invention integral if by making the two pieces integral does not prevent the invention from properly functioning. Making the mirror pair between mirrors 640 and 660 into an integral pair and thus a trombone pair would be within the skill of one of ordinary skill in the art. Anafi further teaches the mirrors disposed substantially symmetrically about a central axis. It would have been obvious to one of ordinary skill in the art at the time the invention was made to equip the Stuhlinger reference with the relay optics of Anafi for the purpose of bringing the light from the sub-aperture telescopes to the combiner while avoiding any possible destructive interference between the light gathered by each sub-aperture telescope.

Regarding claims 3-5, Stuhlinger teaches the sub-aperture telescope comprises four mirrors arranged in two successive reflective telescope arrangements (Fig. 2). The Stuhlinger reference shows a Cassegrain telescope formed by the first and second mirrors and a Newtonian telescope formed by the third and fourth mirrors. Cassegrain, Newtonian and Gregorian reflective telescopes are all extremely well known in the art. It is well within the skill of one of ordinary skill in the art to change between the three types of reflective telescopes by changing the curvature of the secondary reflector. The choice of type of reflective telescopes would depend upon the size of the telescope and viewing angle previewed by the user and whether the

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user wished to create an intermediate image within the telescope as with a Gregorian telescope. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the sub-aperture telescopes of Stuhlinger form any of the claimed combinations of reflective type telescopes for the purpose of having the telescope assembly achieve a desired size and user viewing angle and forming an intermediate image if so desired.

Regarding claim 6, Stuhlinger teaches the set of combiner optics forms a combiner telescope (Fig. 2).

Regarding claim 7, Stuhlinger teaches the exit pupils are located about at an entrance pupil of the combiner telescope (Fig. 2).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stuhlinger ("All-reflective phased array imaging telescopes") in view of Anafi (US 4,953,964) as applied to claim 1 above, and further in view of Duncan (US 5,905,591).

Stuhlinger in combination with Anafi teaches the invention as claimed but lacks reference to correcting sine magnification errors. Duncan teaches the use of powered mirrors in a telescope used to correct for sine magnification errors (col. 6 lines 40-49). It would have been obvious to one of ordinary skill in the art at the time the invention was made to for the Stuhlinger invention to include correction for sine magnification errors as taught by Duncan for the purpose of achieving a clear image without the distortions associated with sine magnification errors.

### *Response to Arguments*

Applicant's arguments filed December 16, 2005 have been fully considered but they are not persuasive.

Applicant argues that the prior art teaches the fold flat mirrors being about three or four beam diameters from the respective exit pupil. The examiner views the broadest reasonable interpretation of about one beam diameter to overlap with the broad range of about three or four beam diameters. If the applicant wishes to limit the range the examiner suggests removing the term "about."

### *Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua L. Pritchett whose telephone number is 571-272-2318. The examiner can normally be reached on Monday - Friday 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A. Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLP 

  
**DREW A. DUNN**  
**SUPERVISORY PATENT EXAMINER**